

**Weekly Activities Summary**  
**Amendment 2 - Full Scale Field Demonstration**  
**Interim Combined Acid Drainage Treatability Study Work Plan**  
Leviathan Mine Site  
Alpine County, California

**Week: August 5 – August 11, 2017**

The following text describes field activities conducted during August 5 through August 11, 2017, to implement Amendment No. 2 to the Interim Combined Acid Drainage Treatability Investigation Work Plan, which Atlantic Richfield submitted to U.S. EPA on March 31, 2017.

## **INTERIM COMBINED TREATMENT OPERATIONS**

### **OPERATIONAL SUMMARY**

- ICT Demonstration operations at a reduced flow rate continued during the period of August 5 through August 11, 2017. Transfer of Pond 2S water was suspended on August 6, 2017, while collection and conveyance of CUD and DS flows were maintained in order to reduce the water level in Pond 4 to a target level of approximately five feet per the USGS gauge.
- The HDS Treatment Plant will be operated at approximately 100 gpm without conveyance of Upper Pond water from Pond 2S into Pond 4 for the next several days to reduce the water level in Pond 4 to a target level of approximately five feet per the USGS gauge. Maintenance and unanticipated HDS Treatment Plant short-term interruptions during this period, as discussed in the operations summary below, increased the time required to reduce the water level in Pond 4 to approximately five feet. Once that water level is achieved, conveyance of Upper Pond water will resume to increase the overall acidity in Pond 4. Atlantic Richfield plans to increase the acidity in Pond 4 to  $\geq 2,900$  mg/L, and then resume HDS Treatment Plant operations at a treatment flow rate of 143 gpm. It is anticipated that operations at the target acidity and 143 gpm will resume on August 23, 2017. Atlantic Richfield will perform daily effluent sampling on each of the first seven days after the treatment flow rate returns to 143 gpm.
- Capture of the CUD and DS flows and conveyance to Pond 4 occurred uninterrupted during the reporting period.

### **HDS TREATMENT PLAN OPERATIONS SUMMARY**

- HDS Treatment Plant operations experienced the following short-term interruptions between August 5 and August 11, 2017:
  - Approximately 7.6 hours on August 5, 2017, due to a high turbidity plant trip.
  - Approximately 36 minutes on August 6, 2017 and approximately 7.83 hours on August 7, 2017, due to a high turbidity plant trip.

- Approximately 2 hours on August 8, 2017, due to a high turbidity plant trip.
- Approximately 18 minutes on August 10, 2017, due to a high reactor pH plant trip.
- Approximately 10.5 hours on August 11, 2017, to perform maintenance and replace the hoses on the sludge recycle peristaltic pumps.
- The HDS Treatment Plant was placed in recycle mode returning effluent to Pond 4 following short-term interruptions between August 5 and August 11, 2017:
  - Approximately 45 minutes on August 5, 2017, after restarting the plant following the high turbidity plant trip.
  - Approximately 1.8 hours on August 7, 2017, after restarting the plant following the high turbidity plant trip.
  - Approximately 1.2 hours on August 8, 2017, after restarting the plant following the high turbidity plant trip.
  - Approximately 55 minutes on August 10, 2017, after restarting the plant following the high reactor pH plant trip.
- The remainder of the time, the HDS Treatment Plant was discharging to Leviathan Creek.
- Capture and conveyance of the CUD and DS were maintained uninterrupted throughout this period.

#### **SAMPLING SUMMARY**

- HDS Treatment Plant ICT sampling was performed on August 5, August 7, August 8, August 9, and August 10, 2017.
- Sampling results received to date are provided in Table 1. A summary of the HDS Treatment Plant effluent field monitoring is presented in Table 2. Flow volumes recorded for the Channel Underdrain, Delta Seep, Leviathan Creek diversion, Upper Pond water transfer, and treated water discharged from the HDS Treatment Plant are included in Table 3. An Interim Combined Treatment operational summary is presented in Table 4.

#### **SLUDGE DISPOSAL SUMMARY**

- Three sludge bins totaling 23,642 kilograms, approximately 39 cubic yards, were transported for off-site disposal at US Ecology in Beatty, NV on August 7, 2017.
- Two sludge bins totaling 15,086 kilograms, approximately 26 cubic yards, were transported for off-site disposal at US Ecology in Beatty, NV on August 9, 2017.
- Sludge wasting volumes are also included in Table 4.

**TABLE 1**  
**HDS TREATMENT PLANT - PRELIMINARY INTERIM COMBINED TREATMENT SAMPLE RESULTS**  
 Leviathan Mine Site  
 Alpine County, California  
 Draft - Provisional Data

Parameter	Basis	July 07, 2017 HDSICT-1 HDS Influent mg/L	July 07, 2017 HDSICT-2 HDS Effluent mg/L	July 10, 2017 HDSICT-1 HDS Influent mg/L	July 10, 2017 HDSICT-2 HDS Effluent mg/L	July 10, 2017 UPCS-2 Pond 2S mg/L	July 11, 2017 HDSICT-1 HDS Influent mg/L	July 11, 2017 HDSICT-2 HDS Effluent mg/L	July 11, 2017 UPCS-2 Pond 2S mg/L	July 12, 2017 HDSICT-1 HDS Influent mg/L	July 12, 2017 HDSICT-2 HDS Effluent mg/L	July 12, 2017 UPCS-2 Pond 2S mg/L
pH (s.u.) <sup>1</sup>	Field	2.76	7.64	2.68	7.91	2.42	2.66	7.51	2.42	2.71	8.01	2.42
Aluminum	Dissolved	250	<1.0	160	0.57	490	161	0.327	542	216	0.632	494
Arsenic	Dissolved	2.6	0.0017	0.68	0.0019	7.6	1.23	0.00206	8.33	1.38	0.0018	8.66
Cadmium	Dissolved	0.037	0.00028 J	0.022	<0.001	0.089	0.0257	0.000299	0.0913	0.027	0.000158	0.0953
Calcium	Dissolved	300	1000	310	1000	190	286	820	179	372	952	222
Chloride	Total	6.7	2.6	2.9	1.9	4.9	<10	<10	<20	2 J	1.8 J	<10
Chromium	Dissolved	0.38	<0.002	0.3	0.00091 J	1.4	0.399	0.00016 J	1.59	0.423	0.0001 J	1.57
Copper	Dissolved	1	0.0014 J	0.81	0.0038	3.2	0.999	0.00186	3.5	0.985	0.00109	3.41
Hardness	Dissolved	1000	2800	1000	2800	740	1030	2350	706	1130	2240	765
Iron	Dissolved	610	<1.0	440	<0.50	960	541	0.171	1110	636	0.041	1190
Lead	Dissolved	0.0021	<0.001	<0.005	<0.001	<0.02	0.00124	0.000029	0.00423	0.00119	0.000006 J	0.0041
Magnesium	Dissolved	80	110	78	77	61	76.6	73.8	62.8	97.4	69.7	73.5
Nickel	Dissolved	2.5	<b>0.15</b>	3.1	<b>0.1</b>	5.8	3.42	0.117	6.55	3.52	0.0608	6.41
Selenium	Total	0.0089	0.002	0.0084	0.0019 J	0.012	0.0029 J	0.0018	0.0053	0.0027 J	0.0019	0.0055
Sulfate	Total	4100	3000	3000	2700	5900	1480	2660	3390	2050	2880	4850
Zinc	Dissolved	0.73	0.0064 J	0.71	0.0028 J	1.4	0.763	0.0014 J	1.34	0.787	0.0004 J	1.37
Acidity	Total	2800	<2.0	2200	<2.0	5300	2380	2	5670	2380	2	5700
Alkalinity (Bicarbonate)	Total	<4.8	37	<4.8	13	<4.8	<2	12	<2	<2	12.3	<2
Alkalinity (Carbonate)	Total	<2.4	<2.4	<2.4	<2.4	<2.4	<2	<2	<2	<2	<2	<2
Alkalinity (Hydroxide)	Total	<1.4	<1.4	<1.4	<1.4	<1.4	<2	<2	<2	<2	<2	<2
Alkalinity (Total)	Total	<4.0	30	<4.0	11	<4.0	<2	12	<2	<2	12.3	<2
Total Dissolved Solids	Total	5800	4400	4700	4500	9100	5110	4130	8780	4900	4280	9690
Total Suspended Solids	Total	44	36	110	16	28	28	31	8.5	25.5	38	8.5

**Notes:**

1. pH values are field measurements and are reported in standard units.
2. Discharge criteria and basis for maximum and average values are listed in the Request for Approval of Modification to the Removal Action at the Leviathan Mine Memorandum (U.S. EPA, 2008).
3. pH setpoint in the Reactor Tank was increased from 8.0 to 8.3 on July 13, 2017. The increase occurred prior to sample collection.

**Abbreviations:**

< - Constituents that were not detected are listed as "<" and the reporting limit is shown.  
 J - Results noted with "J" are an estimated value or were less than the reporting limit but greater than or equal to the method detection limit.  
 mg/L - milligrams per liter  
 NP - Not Promulgated

**TABLE 1**  
**HDS TREATMENT PLANT - PRELIMINARY INTERIM COMBINED TREATMENT SAMPLE RESULTS**  
 Leviathan Mine Site  
 Alpine County, California  
 Draft - Provisional Data

Parameter	Basis	July 13, 2017 HDSICT-1 HDS Influent mg/L	July 13, 2017 HDSICT-2 HDS Effluent mg/L	July 13, 2017 UPCS-2 Pond 2S mg/L	July 14, 2017 HDSICT-1 HDS Influent mg/L	July 14, 2017 HDSICT-2 HDS Effluent mg/L	July 14, 2017 UPCS-2 Pond 2S mg/L	July 19, 2017 HDSICT-1 HDS Influent mg/L	July 19, 2017 HDSICT-2 HDS Effluent mg/L	July 20, 2017 HDSICT-1 HDS Influent mg/L	July 20, 2017 HDSICT-2 HDS Effluent mg/L	July 26, 2017 HDSICT-1 HDS Influent mg/L	July 26, 2017 HDSICT-2 HDS Effluent mg/L
pH (s.u.) <sup>1</sup>	Field	2.71	8.18	2.45	2.62	8.19	2.41	2.74	8.32	NA	NA	NA	NA
Aluminum	Dissolved	250	0.68	540	310	0.48 J	690	149	1	NA	NA	NA	NA
Arsenic	Dissolved	2.4	0.0016	8.6	2.5	0.0026	9.2	1.01	0.00194	NA	NA	NA	NA
Cadmium	Dissolved	0.035	<0.001	0.091	0.037	<0.001	0.087	0.023	0.000066	NA	NA	NA	NA
Calcium	Dissolved	310	1500	220	360	1400	260	338	1060	NA	NA	NA	NA
Chloride	Total	12	<10	12	12	<10	12	2.6	2.3	NA	NA	NA	NA
Chromium	Dissolved	0.53	<0.002	1.4	0.41	<0.002	1.5	0.357	0.00009 J	NA	NA	NA	NA
Copper	Dissolved	1.1	0.0044	2.9	0.88	0.001 J	3.3	0.817	0.00047	NA	NA	NA	NA
Hardness	Dissolved	1100	3500	810	1400	3900	930	1180	2910	NA	NA	NA	NA
Iron	Dissolved	630	<0.50	1200	760	<0.50	1400	489	0.122	NA	NA	NA	NA
Lead	Dissolved	<0.005	<0.001	<0.01	0.0018	<0.001	0.0042	0.001	0.000008 J	NA	NA	NA	NA
Magnesium	Dissolved	85	77	76	100	68	99	80.1	65.6	NA	NA	NA	NA
Nickel	Dissolved	3.2	0.05	5.4	2.5	0.049	6.4	3.16	0.0219	NA	NA	NA	NA
Selenium	Total	0.0044 J	0.0021	0.0067 J	<0.02	0.0028	0.0057 J	0.0027 J	0.0017	NA	NA	NA	NA
Sulfate	Total	3700	2800	6200	4200	3600	6800	2520	3200	NA	NA	NA	NA
Zinc	Dissolved	0.82	0.003 J	1.3	0.74	<0.02	1.1	0.715	0.0004 J	NA	NA	NA	NA
Acidity	Total	2800	<2.0	5700	3100	<2.0	5800	2250	2	NA	NA	NA	NA
Alkalinity (Bicarbonate)	Total	<4.8	10	<4.8	<4.8	9.5	<4.8	<2	13.5	NA	NA	NA	NA
Alkalinity (Carbonate)	Total	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2	<2	NA	NA	NA	NA
Alkalinity (Hydroxide)	Total	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<2	<2	NA	NA	NA	NA
Alkalinity (Total)	Total	<4.0	8.5	<4.0	<4.0	7.8	<4.0	<2	13.5	NA	NA	NA	NA
Total Dissolved Solids	Total	5800	5200	9500	6000	4200	9300	4770	4240	NA	NA	NA	NA
Total Suspended Solids	Total	52	6.3	32	43	240	10	43	65.5	NA	NA	NA	NA

**TABLE 1**  
**HDS TREATMENT PLANT - PRELIMINARY INTERIM COMBINED TREATMENT SAMPLE RESULTS**  
 Leviathan Mine Site  
 Alpine County, California  
 Draft - Provisional Data

Parameter	Basis	August 02, 2017 HDSICT-1 HDS Influent mg/L	August 02, 2017 HDSICT-2 HDS Effluent mg/L	August 03, 2017 HDSICT-1 HDS Influent mg/L	August 03, 2017 HDSICT-2 HDS Effluent mg/L	August 03, 2017 UPCS-2 Pond 2S mg/L	August 04, 2017 HDSICT-1 HDS Influent mg/L	August 04, 2017 HDSICT-2 HDS Effluent mg/L	August 04, 2017 UPCS-2 Pond 2S mg/L	August 05, 2017 HDSICT-1 HDS Influent mg/L	August 05, 2017 HDSICT-2 HDS Effluent mg/L	August 05, 2017 UPCS-2 Pond 2S mg/L
pH (s.u.) <sup>1</sup>	Field	2.68	8.37	2.42	8.33	2.05	2.55	8.48	2.30	2.54	8.4	2.23
Aluminum	Dissolved	210	1.3	190	1.2	590	200	1.9	550	220	2.0	600
Arsenic	Dissolved	2.6	0.0024	2.5	0.0019	12	2.7	0.0031	12	2.4	0.0024	13
Cadmium	Dissolved	0.032	<0.001	0.03	<0.001	0.11	0.032	<0.001	0.11	0.032	<0.001	0.12
Calcium	Dissolved	370	1300	370	1200	240	370	1200	220	380	1300	230
Chloride	Total	10	3.3 J	5.1	<100	13	4.4	2.6	15	5.0	2.7	7.8
Chromium	Dissolved	0.43	<0.002	0.43	<0.002	1.6	0.44	<0.002	1.6	0.45	<0.002	1.8
Copper	Dissolved	0.81	0.0041	0.82	0.0029	3.1	0.87	0.003	3.2	0.87	0.0036	3.5
Hardness	Dissolved	1300	3400	1200	3000	890	1200	3200	830	1300	3800	930
Iron	Dissolved	480	<0.50	460	<0.50	1200	520	<0.50	1200	510	<0.50	1200
Lead	Dissolved	0.001	<0.001	0.0009 J	<0.001	<0.005	0.00093 J	<0.001	0.0054	0.00096 J	<0.001	0.0035 J
Magnesium	Dissolved	77	65	71	57	82	77	53	78	78	50	82
Nickel	Dissolved	2.7	0.031	2.6	0.022	6.7	2.8	0.015	6.9	2.8	0.017	7.5
Selenium	Total	0.014	0.0028	0.0036	0.0029	0.006	0.0037	0.0029	0.0066	0.0037	0.003	0.0071 J
Sulfate	Total	3700	3300	3700	3100	7000	3400	2500	9600	3800	3100	7600
Zinc	Dissolved	0.68	0.004 J	0.63	<0.02	1.4	0.66	<0.02	1.5	0.67	0.0048 J	1.6
Acidity	Total	2500	<2.0	2400	<2.0	6100	2600	<2.0	6800	2600	<2.0	6200
Alkalinity (Bicarbonate)	Total	<4.8	14	<4.8	14	<4.8	<4.8	17	<4.8	<4.8	17	<4.8
Alkalinity (Carbonate)	Total	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4
Alkalinity (Hydroxide)	Total	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4	<1.4
Alkalinity (Total)	Total	<4.0	12	<4.0	12	<4.0	<4.0	14	<4.0	<4.0	14	<4.0
Total Dissolved Solids	Total	5700	5000	5400	4900	10000	5700	4500	11000	5000	4700	10000
Total Suspended Solids	Total	35	18	32	17	28	32	33	32	36	37	31

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 Draft - Provisional Data

Parameter	Basis	August 07, 2017 HDSICT-1 HDS Influent mg/L	August 07, 2017 HDSICT-2 HDS Effluent mg/L	August 08, 2017 HDSICT-1 HDS Influent mg/L	August 08, 2017 HDSICT-2 HDS Effluent mg/L	August 09, 2017 HDSICT-1 HDS Influent mg/L	August 09, 2017 HDSICT-2 HDS Effluent mg/L	August 10, 2017 HDSICT-1 HDS Influent mg/L	August 10, 2017 HDSICT-2 HDS Effluent mg/L	Maximum Discharge Criteria <sup>2</sup> mg/L	Average Discharge Criteria <sup>2</sup> mg/L
pH (s.u.) <sup>1</sup>	Field	2.49	8.46	2.73	8.45	NA	NA	NA	NA	6.0 - 9.0	-
Aluminum	Dissolved	190	1.8	160	1.3	NA	NA	NA	NA	4	2.0
Arsenic	Dissolved	1.7	0.0018	1.2	0.0021	NA	NA	NA	NA	0.340	0.15
Cadmium	Dissolved	0.027	<0.001	0.022	<0.001	NA	NA	NA	NA	0.0090	0.004
Calcium	Dissolved	370	1300	390	1200	NA	NA	NA	NA	-	-
Chloride	Total	3.9	2.0	4.0	2.7	NA	NA	NA	NA	-	-
Chromium	Dissolved	0.4	<0.002	0.31	<0.002	NA	NA	NA	NA	0.970	0.31
Copper	Dissolved	0.79	0.0033	0.6	0.0032	NA	NA	NA	NA	0.026	0.016
Hardness	Dissolved	1200	3800	1300	3200	NA	NA	NA	NA	-	-
Iron	Dissolved	470	<0.50	460	<0.50	NA	NA	NA	NA	2	1.0
Lead	Dissolved	<0.002	<0.001	0.00064 J	<0.001	NA	NA	NA	NA	0.136	0.005
Magnesium	Dissolved	78	58	78	57	NA	NA	NA	NA	-	-
Nickel	Dissolved	2.9	0.017	2.5	0.025	NA	NA	NA	NA	0.84	0.094
Selenium	Total	0.0035 J	0.0028	0.0083 J	0.0019 J	NA	NA	NA	NA	NP	0.005
Sulfate	Total	3600	3100	3200	2600	NA	NA	NA	NA	-	-
Zinc	Dissolved	0.65	0.0091 J	0.59	<0.02	NA	NA	NA	NA	0.21	0.21
Acidity	Total	2300	<2.0	1900	<2.0	NA	NA	NA	NA	-	-
Alkalinity (Bicarbonate)	Total	<4.8	16	<4.8	19	NA	NA	NA	NA	-	-
Alkalinity (Carbonate)	Total	<2.4	<2.4	<2.4	<2.4	NA	NA	NA	NA	-	-
Alkalinity (Hydroxide)	Total	<1.4	<1.4	<1.4	<1.4	NA	NA	NA	NA	-	-
Alkalinity (Total)	Total	<4.0	14	<4.0	16	NA	NA	NA	NA	-	-
Total Dissolved Solids	Total	5200	4000	4800	4500	NA	NA	NA	NA	-	-
Total Suspended Solids	Total	38	18	47	27	NA	NA	NA	NA	-	-

**TABLE 2**  
**HDS TREATMENT PLANT - EFFLUENT FIELD MONITORING**  
Leviathan Mine Site  
Alpine County, California  
Draft - Provisional Data

Date	Time	HDS Treatment Plant Effluent Field Monitoring			
		Flow <sup>1</sup> (gpm)	pH <sup>2</sup> (s.u.)	Dissolved Iron <sup>3</sup> (mg/L)	Turbidity (NTU) <sup>4</sup>
07/07/17	9:25 AM	40.0	7.21	0.02	4.7
07/08/17	7:35 AM	70.0	7.50	0.44	3.8
07/09/17	7:50 AM	70.0	7.60	0.07	4.0
07/10/17	8:00 AM	70.0	7.31	0.17	15.3
07/10/17	4:30 PM	143.0	7.62	0.09	1.7
07/11/17	6:20 AM	143.0	8.05	0.58	3.0
07/11/17	6:10 PM	143.0	8.12	0.65	1.7
07/12/17	6:15 AM	143.0	7.99	0.06	2.3
07/12/17	6:00 PM	143.0	8.11	0.09	2.8
07/13/17	6:10 AM	143.0	7.96	0.11	2.6
07/13/17	6:10 AM	143.0	7.95	0.11	2.6
07/13/17	6:00 PM	143.0	8.01	0.04	2.5
07/14/17	6:50 AM	143.0	7.71	0.04	4.9
07/14/17	7:00 PM	143.0	8.35	0.57	2.1
07/15/17	7:00 PM	123.0	8.38	0.03	1.4
07/16/17	6:00 PM	100.0	8.01	< 0.03	3.7
07/17/17	6:20 AM	100.0	8.28	< 0.03	3.3
07/17/17	7:00 PM	100.0	8.18	< 0.03	2.5
07/18/17	6:15 AM	100.0	8.50	< 0.03	10.1
07/18/17	4:30 PM	100.0	7.91	0.14	2.57
07/19/17	5:15 PM	100.0	7.81	0.06	2.26
07/20/17	6:45 AM	100.0	8.06	< 0.03	3.44
07/20/17	3:50 PM	100.0	7.73	< 0.03	2.73
07/21/17	7:45 AM	100.0	8.16	0.17	4.8
07/21/17	3:00 PM	100.0	8.05	< 0.03	4.07
07/22/17	7:30 AM	100.0	8.09	0.05	3.64
07/23/17	7:00 AM	100.0	8.36	0.04	3.11
07/24/17	7:50 AM	100.0	NA	0.03	NA
07/25/17	8:15 AM	100.0	8.53	0.03	4.61
07/26/17	8:10 AM	100.0	8.54	0.06	7.69
07/27/17	--	--	--	--	--
07/28/17	--	--	--	--	--
07/29/17	2:00 PM	120.0	8.39	0.09	14.9
07/30/17	8:45 AM	120.0	8.38	0.09	6.33
07/31/17	8:30 AM	100.0	8.33	< 0.03	13.8
08/01/17	8:25 AM	100.0	8.27	< 0.03	2.33
08/01/17	5:45 PM	100.0	7.99	0.19	38.4
08/02/17	7:30 AM	100.0	8.17	< 0.03	1.53
08/02/17	1:35 PM	143.0	8.3	0.06	1.34
08/03/17	7:20 AM	143.0	8.27	< 0.03	1.38
08/03/17	12:30 PM	143.0	8.33	0.03	0.58
08/03/17	6:10 PM	75.0	8.4	NA	NA
08/04/17	7:45 AM	75.0	8.42	0.04	2.61
08/04/17	4:10 PM	100.0	8.49	< 0.03	NA
08/05/17	7:30 AM	100.0	8.47	< 0.03	9.2
08/05/17	1:30 PM	75.0	8.42	--	1.0
08/06/17	8:34 AM	75.0	8.39	< 0.03	2.5
08/06/17	12:00 PM	75.0	7.94	--	11.1
08/07/17	8:20 AM	75.0	8.61	0.04	6.9
08/07/17	1:00 PM	100.0	8.48	--	2.2
08/07/17	6:00 PM	110.0	8.41	0.05	0.8
08/08/17	7:40 AM	100.0	8.63	< 0.03	25.6
08/08/17	5:30 PM	100.0	8.40	0.03	0.5
08/09/17	7:15 AM	100.0	8.46	< 0.03	0.5
08/09/17	12:00 PM	100.0	8.61	< 0.03	0.3
08/10/17	11:35 AM	100.0	8.63	< 0.03	0.7
08/10/17	6:00 PM	150.0	8.57	0.03	0.6
08/11/17	7:30 AM	125.0	8.64	< 0.03	0.8
08/11/17	1:05 PM	150.0	8.72	--	--

**Notes:**

- <sup>1</sup> HDS Treatment Plant influent flow rate measurements are calculated from flow totalizer volume measurements.
- <sup>2</sup> Effluent pH values are field measurements and are reported in standard units. The HDS Treatment Plant pH set point was 8.0 from July 7 through July 13, 2017. It was increased to 8.3 from July 13 through July 24, 2017. It was increased to 8.6 from July 24 through July 27, 2017. It returned to 8.3 from July 27 through August 4, 2017. It was increased to 8.5 on August 4, 2017, and remains there currently.
- <sup>3</sup> Dissolved Iron values are field measurements and are reported in mg/L.
- <sup>4</sup> Turbidity values are field measurements and are reported in NTU.

**Abbreviations:**

- gpm - gallons per minute  
mg/L - milligrams per liter  
NA - not available
- s.u. - standard unit  
-- - not applicable, plant not in operation  
< - less than

**TABLE 3**  
**INTERIM COMBINED TREATMENT VOLUMES**  
Leviathan Mine Site  
Alpine County, California  
Draft - Provisional Data

Date	CUD Collection Volume	DS Collection Volume	Leviathan Creek Diversion Volume	Upper Pond Transfer Volume	Treated Water Discharge from HDS Treatment Plant Recorded Flow <sup>1,2</sup>	
	(gallons)	(gallons)	(gallons)	(gallons)	(gpm)	(gallons)
7/5/2017	68,619	22,957	0	115,540	0	0
7/6/2017	70,136	23,188	0	100,204	0	0
7/7/2017 <sup>3</sup>	70,235	22,763	1,619	0	39.0	56,121
7/8/2017	70,331	22,738	0	0	70.0	100,774
7/9/2017	70,411	22,299	0	0	70.0	100,738
7/10/2017	70,542	22,242	0	35,000	109.6	157,807
7/11/2017	70,617	22,112	2,959	39,000	142.2	204,716
7/12/2017	70,413	21,686	0	57,750	142.7	205,542
7/13/2017	70,598	22,402	0	100,800	113.6	163,548
7/14/2017	70,698	22,017	6,591	84,480	84.2	121,242
7/15/2017	70,762	29,203	15,663	30,600	100.0	143,928
7/16/2017	70,790	30,773	6,199	21,000	88.7	127,786
7/17/2017	70,872	21,409	0	0	99.8	143,766
7/18/2017	70,911	20,729	0	0	99.7	143,523
7/19/2017	71,055	21,852	0	0	67.4	97,019
7/20/2017	71,083	20,656	0	0	99.4	143,175
7/21/2017	71,117	20,654	0	0	100.0	143,959
7/22/2017	71,110	20,572	0	0	100.0	143,991
7/23/2017	71,204	20,532	0	0	68.2	98,253
7/24/2017	71,273	20,317	0	0	46.0	66,283
7/25/2017	71,346	20,426	0	0	100.0	143,955
7/26/2017	71,353	20,272	0	0	46.7	67,190
7/27/2017	71,356	19,904	622	0	0.0	0
7/28/2017	71,415	19,787	175	0	0.0	0
7/29/2017	71,471	19,939	0	50,026	67.2	96,814
7/30/2017	71,439	19,676	0	14,515	107.3	154,467
7/31/2017	71,417	19,880	0	75,355	100.0	144,000
8/1/2017	71,469	19,638	15,828	88,502	53.4	76,866
8/2/2017	71,535	19,342	24,827	59,674	95.4	137,334
8/3/2017	71,604	19,801	16,344	43,862	121.2	174,530
8/4/2017	71,753	19,073	0	19,786	71.7	103,296
8/5/2017	71,430	20,330	0	17,466	52.4	75,439
8/6/2017	71,905	19,480	0	21,174	73.2	105,359
8/7/2017	71,861	19,198	0	0	62.3	89,732
8/8/2017	71,815	18,576	0	0	89.8	129,327
8/9/2017	71,793	19,161	0	0	102.9	148,138
8/10/2017	71,645	19,401	2,342	0	128.9	185,660
8/11/2017	71,681	18,865	0	0	71.0	102,199
Average Flow Rate or Total Discharged	2,701,067	803,852	93,169	974,734	82.9	4,296,477

**Notes:**

1. Treated Water Discharge recorded flows are calculated from flow totalizer volume measurements.
2. The average flow rate is reported. Water discharge does not always occur 24 hours per day. The operational flow rate may also vary during the day.
3. Discharge of treated combined water from the HDS Treatment Plant started on July 7, 2017, at approximately 9:53 AM.

**Abbreviations:**

CUD - Channel Underdrain	HDS - High Density Sludge
DS - Delta Seep	gpm - gallons per minute



TABLE 4  
INTERIM COMBINED TREATMENT OPERATIONAL SUMMARY  
Leviathan Mine Site  
Alpine County, California

Date	Influent Flow Setpoint (gpm)	Hours of Operation <sup>a</sup>	Sludge Recycle Setpoint (gpm)	Flocculant Dosage Setpoint (ppm)	Reactor Tank pH <sup>b</sup> (s.u.)	Effluent Tank pH <sup>b</sup> (s.u.)	Effluent Turbidity <sup>c</sup> (NTUs)	Lime Utilization <sup>d</sup> (g/L)	Sludge Waste (gallons)	Sludge Disposed (kg)
7/22/2017	100	24.0	25	2.4	8.30	8.24	2.68	1.55	800	0
7/23/2017	100	16.3	25	2.4	8.12	8.05	3.59	1.51	1200	0
7/24/2017	100	12.5	25	2.4	8.16	8.00	6.75	1.65	600	20575
7/25/2017	100	24.0	25	2.4	8.60	8.61	5.34	1.26	1200	0
7/26/2017	100	11.1	25	2.4	8.60	8.61	7.50	1.20	1200	13227
7/27/2017	--	--	--	--	--	--	--	--	--	--
7/28/2017	--	--	--	--	--	--	--	--	--	--
7/29/2017	120	13.5	25	2.4	8.56	8.25	13.54	1.60	600	0
7/30/2017	120	8.75	25	2.4	8.31	8.29	4.01	1.62	4800	0
7/30/2017	100	15.25								
7/31/2017	100	24.0	25	2.4	8.29	8.26	5.67	1.68	3600	0
8/1/2017	100	12.6	50	2.4	8.29	8.33	11.12	2.22	5600	0
8/2/2017	100	1.05	50	2.4	8.30	8.30	2.83	2.05	8600	0
8/2/2017	123	1.17	33							
8/2/2017	143	14.3	33							
8/3/2017	143	16.4	33	2.4	8.30	8.32	6.19	1.84	9620	9417
8/3/2017	75	7.6								
8/4/2017	75	15.2	33	2.4	8.49	8.49	12.98	2.29	8450	0
8/4/2017	100	5.8								
8/5/2017	100	3.3	33	2.4	8.66	8.46	8.39	2.00	7400	0
8/5/2017	75	12.3	25 / 33							
8/6/2017	75	23.4	33	2.4	8.51	8.38	8.39	2.09	3000	0
8/7/2017	75	--	33	2.4	8.64	8.56	8.21	1.84	15900	23642
8/7/2017	100	7.9								
8/7/2017	110	6.4								
8/8/2017	110	7.6	33 / 25	2.4	8.55	8.48	11.10	1.64	12600	0
8/8/2017	100	13.2								
8/9/2017	100	21.1	25	2.4	8.50	8.51	0.75	1.54	8625	15086
8/9/2017	125	2.9								
8/10/2017	100	9.5	25 / 20	2.4	8.52	8.40	3.22	1.31	12500	0
8/10/2017	125	7.5								
8/10/2017	150	5.8								
8/11/2017	125	12.0	20	2.4	8.51	8.27	0.76	1.47	2200	0
8/11/2017	150	1.5								

Notes:

- <sup>a</sup> The hours of operation are when the HDS Treatment Plant is actively discharging to Leviathan Creek.
- <sup>b</sup> The average of the in-line pH probe measurements is presented. The Reactor Tank pH set point was 8.3 from July 22 through July 24, 2017. It was increased to 8.6 from July 24 through July 27, 2017 because the HDS Treatment Plant was treating primarily Channel Underdrain and Delta Seep water. It returned to 8.3 from July 27 through August 4, 2017 because the HDS Treatment Plant began treating combined water again. It was increased to 8.5 on August 4, 2017, and remains there currently to gather data operating at a higher pH setpoint with combined water.
- <sup>c</sup> The average of the in-line turbidity meter measurements is presented.
- <sup>d</sup> The average of the in-line lime utilization rate based on the mass of lime dosed and the influent flow rate is presented.

Abbreviations:

-- = not measured or not applicable      gpm = gallon per minute      L = liter      s.u. = standard unit  
g = gram      kg = kilogram      ppm = part per million